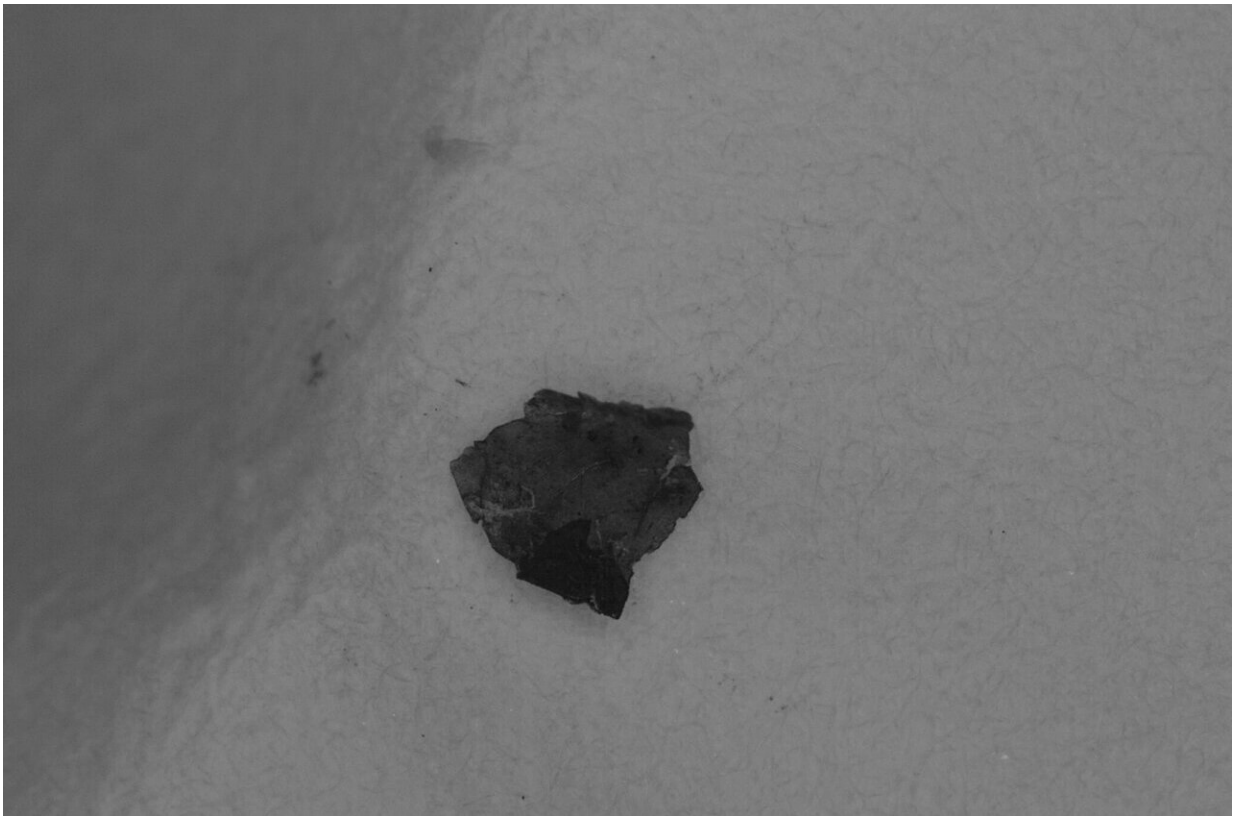


Study reveals abundance of microscopic paint flakes in the North Atlantic

October 7 2021, by Alan Williams



A microscopic paint flake, measuring around $320\mu\text{m}$ in diameter, collected during a CPR survey in the Southern North Sea. Credit: Andrew Turner, University of Plymouth

Flakes of paint could be one of the most abundant type of microplastic particles in the ocean, new research has suggested.

Through a range of surveys conducted across the North Atlantic Ocean, scientists estimated that each cubic meter of seawater contained an average of 0.01 [paint](#) flakes.

This, they say, suggests the material is second only in terms of recorded abundance to microplastic fibers, which have an estimated concentration of about 0.16 particles per m³.

A detailed [chemical analysis](#) of some of the flakes, conducted on some of the particles gathered during the surveys, also revealed high quantities of copper, lead, iron and other elements.

This is because they are designed to have antifouling or anti-corrosive properties, with the researchers saying it could pose an additional environmental threat to both the ocean and many species living within it when they ingest the particles.

The study, published in *Science of the Total Environment*, was carried out by scientists from the University of Plymouth and the Marine Biological Association (MBA).

Over the past two decades, the organizations have collaborated on a number of ocean plastics projects, and in 2019 demonstrated there had been a [significant increase in open-ocean plastics since the late 1950s](#).



The Continuous Plankton Recorder (CPR) is fitted with silk meshes and towed in surface waters similar to the spaces occupied by marine mammals. Credit: Marine Biological Association

Dr. Andrew Turner, Associate Professor (Reader) in Environmental Sciences at the University of Plymouth, is the current study's lead author. He said: "Paint particles have often been an overlooked component of marine microplastics but this study shows that they are relatively abundant in the ocean. The presence of toxic metals like lead and copper pose additional risks to wildlife."

The study is based around data gathered by the MBA's Continuous Plankton Recorder (CPR), which is fitted with silk meshes and towed in [surface waters](#) similar to the spaces occupied by marine mammals.

Over the course of 2018, it was used to sample sea water right across the

North Atlantic region, from the Arctic Ocean to Spain, and from the eastern United States to Sweden.

More than 3,600 samples were collected during that time and flakes were reported in about 2.8% (102) of all silks analyzed. That compares with fibers or strands being observed in 48.8% (1763) of silks over the same period.

Paint flakes also appeared to be more densely distributed around the shelf seas of northwest Europe than in the open, or more remote, [ocean](#) environments.

An analysis of the paint particles was carried out in labs at the University using X-ray fluorescence (XRF) spectrometry, with their chemical composition consistent with that found on the hulls and other painted components of ships mobilized in the Atlantic region.

Dr. Clare Ostle, the co-ordinator of the Pacific Continuous Plankton Recorder (CPR) Survey at the MBA and co-author on the study, added: "We now know that plastics are everywhere, and that most organisms are likely ingesting them, however there is less known about how harmful this ingestion might be. This study has highlighted that paint flakes are an abundant form of microplastic that should not be overlooked, particularly as some may have toxic properties."

More information: Andrew Turner et al, Occurrence and chemical characteristics of microplastic paint flakes in the North Atlantic Ocean, *Science of The Total Environment* (2021). [DOI: 10.1016/j.scitotenv.2021.150375](https://doi.org/10.1016/j.scitotenv.2021.150375)

Provided by University of Plymouth

Citation: Study reveals abundance of microscopic paint flakes in the North Atlantic (2021, October 7) retrieved 24 April 2024 from <https://phys.org/news/2021-10-reveals-abundance-microscopic-flakes-north.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.